

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An electrochemical sensor comprising:

an electrochemical cell having a sensor and an electrical output means;

fluid flow control means positioned so as to release a fluid jet of a fluid from inside the fluid flow control means onto the sensor means, the fluid jet having a fluid flow velocity, the fluid flow control means having means for controlling the velocity of the fluid jet, the fluid flow velocity being defined by the Reynolds number of the fluid when the fluid is in the fluid flow control means; and

wherein control of the Reynolds number and measurement of the electrical output of the sensor-electrochemical cell provide a measure of the build-up of scale on the working electrode sensor.

2. (Currently Amended) An electrochemical sensor as claimed in claim 1 wherein the sensor has a sensor surface and, the measure of scale build up quantifies the scale build up on the sensor surface in the electrochemical cell.

3. (Original) An electrochemical sensor as claimed in claim 1 wherein, the sensor detects scale build up to measure the scaling tendency of the fluid.

4. (Currently Amended) An electrochemical sensor as claimed in any preceding claim 1 wherein, the fluid control means is a conduit provided with a control valve or a pump.

5. (Currently Amended) An electrochemical sensor as claimed in any preceding claim 1 further comprising an electrical output measurement means, wherein, the electrical output measurement means sensor measures the change in electrical output as a function of Reynolds Number during use of the fluid flow control means.

6. (Currently Amended) An electrochemical sensor as claimed in any preceding claim 1 5 wherein the sensor responds to limiting current and, the electrical output measurement means measures the limiting current response of the sensor as a function of Reynolds Number.

7. (Currently Amended) An electrochemical sensor as claimed in any preceding claim 1, wherein the fluid flow control means is a conduit having a predefined diameter (d) and is positioned at a height (H) above the sensor having a radius (r).

8. (Original) An electrochemical sensor as claimed in claim 7 wherein laminar flow of the fluid from the fluid control means is provided by setting said diameter (d), height (H) and radius (r).

9. (Original) An electrochemical sensor as claimed in claim 7 wherein $H/d = 1$; and $r/d < 0.5$.

10. (Currently Amended) An electrochemical sensor as claimed in ~~any preceding~~ claim 1 further comprising fluid sampling means for obtaining a sample of a test fluid.

11. (Currently Amended) An electrochemical sensor as claimed in ~~any preceding~~ claim 10 wherein, the fluid sampling means contains fluid isolation means for isolating the test fluid from a bulk fluid.

12. (Currently Amended) An electrochemical sensor as claimed in claim 811 wherein, the fluid isolation means ~~is provided by~~includes a container having at least one sealable valve which, when opened, allows the test fluid to enter the fluid sampling means.

13. (Currently Amended) An electrochemical sensor as claimed in ~~any preceding~~ claim 1 wherein, the fluid flow control means comprises a flow meter or flow sensor for measuring flow, connected to a conduit from which said fluid jet is ~~expelled~~released.

14. (Currently Amended) An electrochemical sensor as claimed in ~~any preceding~~ claim 1 wherein, the sensor comprises a working electrode, a counting electrode and a reference electrode.

15. (Currently Amended) An electrochemical sensor as claimed in ~~any preceding~~ claim 1 wherein, the electrochemical sensor further comprises a reservoir for storing a ~~second~~, ~~pre-prepared~~ electrolyte, flow control means and one or more conduits connected to the ~~electric~~electrochemical cell such that the ~~pre-prepared~~ electrolyte is used with the ~~electric~~electrochemical cell to measure the quantity of scale deposited by ~~the~~a test fluid by measuring the electrical output of the electrochemical cell as a function of Reynolds number.

16. (Original) An electrochemical sensor as claimed in claim 15, wherein the electrolyte is a solution.

17. (Currently Amended) An electrochemical sensor as claimed in claim 15 or claim 16 wherein, the electrolyte is a solution of brine containing a suitable tracer.

18. (Original) An electrochemical sensor as claimed in claim 17 wherein the tracer is ionic.

19. (Original) An electrochemical sensor as claimed in claim 17 wherein the tracer is oxygen.

20. (Currently Amended) An electrochemical sensor as claimed in claims 15 to ~~19~~ wherein, the ~~pre-prepared solution~~electrolyte has a saturation ratio of less than 1.

21. (Currently Amended) An electrochemical sensor as claimed in claims 15 to ~~20~~ wherein, the ~~pre-prepared solution~~electrolyte has a saturation ratio of greater than 1.

22. (Currently Amended) A method of measuring the scaling properties of a test fluid, the method comprising the steps of:

controlling ~~the-a~~ velocity of a fluid jet of a fluid as defined by the Reynolds number of the fluid when the fluid is in a fluid flow control means;

releasing the fluid jet from the fluid control means onto a sensor of an electrochemical cell; and

measuring the electrical output from the ~~sensor~~electrochemical cell as a function of the Reynolds number of the ~~jet~~ fluid, the sensor being in contact with a sample of the test fluid.

23. (Currently Amended) The method of claim 20 wherein, the ~~sensor~~electrochemical cell has a sensor and the ~~electrochemical cell~~ gives a measure of the change in electrical output as a function of Reynolds number during use of the fluid flow control means.

24. (Currently Amended) The method of claim 22 or ~~23~~ wherein, the electrical output provides a measure of the limiting current response of the electrochemical cell as a function of Reynolds Number.

25. (Currently Amended) The method of claims 22 to ~~24~~, wherein the fluid flow control means is a conduit having a predefined diameter (d) and is positioned at a height (H) above the ~~working electrode or~~ sensor having a radius (r).

26. (Original) The method of claim 25, wherein laminar flow of the fluid from the fluid control means is provided by setting said diameter (d), height (H) and radius (r).

27. (Currently Amended) The method of claim 25 or ~~claim 26~~ wherein $H/d = 1$; and $r/d < 0.5$.

28. (Currently Amended) A method as claimed in claims 22 to ~~27~~ comprising the further step of isolating the test fluid from a flowing fluid prior to measuring the electrical output from the ~~electricate~~electrochemical cell as a function of the Reynolds number of the fluid.

29. (Original) A method as claimed in claim 28 wherein, the test fluid is isolated by closing valves arranged upstream and downstream of a predetermined measuring location in a sample measuring means.

30. (Currently Amended) A method as claimed in claims 22 to 29 wherein the fluid is isolated by removably attaching a sampling conduit to a first conduit in which ~~the~~ bulk of the fluid is situated, and by providing valves to isolate the sampling conduit from the first conduit.

31. (Currently Amended) A method of measuring the scaling properties of a test fluid, the method comprising the steps of:

introducing a jet of test fluid into an electrochemical cell so as to allow scale to build up on one or more surfaces in the electrochemical cell;

removing the test fluid from the electrochemical cell;

introducing a pre-prepared solution into the electrochemical cell; and

measuring the electrical output from the electrochemical cell.

32. (Original) A method as claimed in claim 31 wherein, the test fluid is introduced into the electrochemical cell at a rate defined by the Reynolds Number of the fluid when contained in a first fluid control means.

33. (Currently Amended) A method as claimed in claim ~~32~~~~31~~ or claim 32 wherein, the pre-prepared solution is introduced into the electrochemical cell at a rate defined by the Reynolds number of the fluid when contained in a second fluid control means.

34. (Currently Amended) The method of claims 31 to 33 wherein, the electrical output measures ~~the~~ change in electrical output as a function of Reynolds Number during use of ~~the~~ fluid flow control means.

35. (Currently Amended) The method of claims 31 to 34 wherein, the electrical output provides a measure of the limiting current response of the electrochemical cell as a function of Reynolds Number.

36. (Currently Amended) The method of claims ~~34~~~~31~~ to 35, wherein the fluid flow control means is a conduit having a predefined diameter (d) and is positioned at a height (H) above ~~the working electrode or a~~ sensor having a radius (r).

37. (Original) The method of claim 36, wherein laminar flow of the fluid from the fluid control means is provided by setting said diameter (d), height (H) and radius (r).

38. (Currently Amended) The method of claim 36 or ~~claim 37~~ wherein H/d = 1/ and r/d<0.5.
39. (Currently Amended) A method as claimed in ~~any of the claims 3136 to 38~~ wherein, the pre-prepared solution has a saturation ratio of less than 1.
40. (Currently Amended) A method as claimed in ~~any of claims 3136 to claim 39~~ wherein, the pre-prepared solution has a saturation ratio of greater than 1.